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CERTIFICATE

This certificate is issued in support of an application for Patent registration in a country outside New Zealand pursuant to the Patents Act 1953 and the Regulations thereunder.

I hereby certify that annexed is a true copy of the Provisional Specification as filed on 16 July 1999 with an application for Letters Patent number 336794 made by TAYLORS ENGINEERING BLENHEIM LTD.

Dated 24 July 2000.

PRIORITY DOCUMENT

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Patents Form No. 4

Patents Act 1953

PROVISIONAL SPECIFICATION

APPARATUS FOR EMPTYING RECEPTACLES

We, TAYLORS ENGINEERING (BLENHEIM) LIMITED, 47 Grove Road, Blenheim, New Zealand, a New Zealand company, do hereby declare this invention to be described in the following statement:

16 JUL 1989

RECEIVED

Title: APPARATUS FOR EMPTYING RECEPTACLES

Technical Field

The present invention relates to an apparatus for emptying the contents of a receptacle that is especially suitable for use in the wine and horticultural industries. The apparatus
5 is capable of gently raising and tipping a receptacle to release the contents therefrom which minimises bruising and/or spillage loss.

Background Art

At present, the transfer of selected grape material (e.g. fruit, pulp, juice or pre-drained skins) from a holding tank receptacle or other fermentation vessel to a membrane press
10 is achieved by manual evacuation or mechanical conveyance.

Manual evacuation is carried out by a person entering the vessel and digging the wet solid material toward and out of a low outwardly opening door into an open throat pump. The material is then either pumped directly to a membrane press or pumped onto a conveyer or open auger where it is conveyed to a membrane press. The main
15 disadvantage of manual evacuation is the requirement for human labour to perform a tedious and potentially unhygienic job. The task is time consuming and thus the overall press cycle time is increased. Further, digging, pumping and auger conveyance of wet material often decreases the quality of the final wine product given that the skins can be sheared allowing unwanted flavours to be secreted from the grapes.

20 An alternate method of evacuation, known as the chuting method, is to mount a conical bottomed tank above a membrane press. The tank is provided with a door or large valve at or adjacent the base which when opened allows the contents to flow directly into the press. It is difficult to control the flow rate and emptying of the contents such that the chuting method is prone to over spills. The contents also tends to agglomerate such that
25 agitation may be required. In view of the fact that the tank is mounted above the press, an extensive catwalk structure is required for access and servicing. The conical bottom of the tank defining the internal cavity floor is also difficult to clean.

Disclosure of Invention

It is an object of the present invention to provide an apparatus for emptying receptacles,
30 which minimises bruising or and/or spillage loss during mechanical evacuation of the

receptacle contents; provides fast controllable emptying which places relatively low stress on the material. It is a further object of the present invention to provide an apparatus that is self-supporting and of a relatively compact design having a low level cradle bed for receipt of a receptacle.

- 5 The present invention provides an apparatus for emptying receptacles comprising a self supporting frame adapted to rest on a supporting surface, a pivotable lifting mechanism and a counterweight member; said lifting mechanism including a pivotable member incorporating a receptacle retainer and a means to move said pivotable member between a lowered and a raised position; wherein said lifting mechanism and said
10 counterweight member are positioned on opposing sides of said frame.

Preferably said means to move said pivotable member is a set of hydraulic rams. Preferably said counterweight member is a second pivotable lifting mechanism retaining a receptacle in the lowered position. Preferably said frame includes a cradle bed to support a receptacle when it is in the lowered position. Optionally said frame further
15 includes a platform at the apex of said frame adjacent said counterweight member, capable of supporting the weight of at least one person to provide a safe observation/maintenance platform.

Brief Description of the Drawing

By way of example only a preferred embodiment of the present invention is described in
20 detail with reference to the accompanying drawing in which:

Fig. 1 is a side view of a receptacle emptying apparatus in accordance with the present invention with a commercially available membrane press positioned beneath the apparatus frame.

Mode for Carrying out the Invention

25 Referring to the drawing, the receptacle emptying apparatus 2 comprises a frame 3, a pivotable lifting mechanism 4 (shown in the raised position) and a counterweight member 5 in the form of a second lifting mechanism 6 retaining a receptacle 7 in the lowered position.

The frame 3 is a symmetrical and substantially open structure having a central archway 8 for receipt of a collection unit such as a membrane press 9. The roof of the archway 8 is open, providing a delivery aperture for the contents from a receptacle as hereinafter

described. The frame 3 includes cradle beds 10, 11 to support each receptacle 7, 12 when same are in the lowered position. Advantageously, the frame 3 can be disassembled into two mirror image sections by disconnecting the struts forming the archway 8 so that each section of the apparatus 2 can be relocated to a new site if desired by a fork lift and
5 reassembled. Similarly, the cradle bed legs may be adjustable in length to accommodate uneven sites.

It will be appreciated that the apparatus 2 can be transported with or without the receptacles 7 or 12 in place, preferably supported on the cradle bed 10 or 11 not in the raised position.

10 Optionally the frame 3 further includes at least one platform at the apex of the archway 8 adjacent the counterweight member 5 and/or at the apex of the archway 8 adjacent the pivot securement of the pivotable arm 14. The platform (not visible) consists of a supported strut being braced or bracketed to the frame 3 and is capable of taking the weight of at least one person. The platform is located at an operationally safe distance
15 from the pivotable arm 14 and receptacle 12 when same are elevated in the raised position. It will be appreciated that the platform can only be safely used when the receptacle 7 is in a substantially lowered position.

Each lifting mechanism 4 or 6 comprises a pivotable member 14, 15, incorporating a collar retainer 16, 17 and a pair of hydraulic rams 18, 19 respectively. The lifting
20 mechanisms 4 & 6 are mirrored configurations of each other. Each hydraulic ram in the pair 18 or 19 is secured to an exterior leg strut 13 and the extendible piston arm 20 is secured to an adjacent arm section of the respective pivotable member 14 or 15. The pivotable member 14 or 15 is pivotably secured, at each end thereof, across the apex of the archway 8, on one side of the frame 3. The securement of the pivotable member 14
25 or 15 and respective set of hydraulic rams 18, 19 enables the pivotable member 14 or 15 to move between a lowered position adjacent the frame 3 and a raised position above the apex of the archway 8 upon extension of the hydraulic ram arms 20.

The receptacles 7 and 12 are of known type provided with an offset top opening 21. The cavity of each receptacle 7 or 12 is filled through an access portal such as the top
30 opening 21, or resealable inlet (not shown).

The membrane press 9 is of known type and typically consists of a cradle bed 22 including a guard 23, supporting a rotary mounted pressing tank 24. The pressing tank

24 has a slidable door (not visible) which seals the access chute 25 to the internal cavity of the tank 24 when closed.

In use, the receptacles 7 and 12 are positioned on the respective cradle bed 10, 11 and the collar retainer 16, 17 is secured. Preferably, the collar retainer 16, 17 is permanently secured to the receptacle 7, 12 by welding. Alternatively, the collar retainer 16, 17 could be releasably secured, in which case the retainer comprises at least one adjustable band and a retaining clip (not visible).

When the pivotable member 14, 15 is in the lowered position the base of the receptacle 7, 12 rests on the cradle bed 10, 11 and the top of the receptacle protrudes through the aperture defined by the pivotable members 14, 15. It will be appreciated that the receptacles 7 or 12 may be filled with any desired vinification material (e.g. fruit, pulp, juice, pre-drained skins or fortifying beverage) prior to or following positioning on the cradle bed 10 or 11. The membrane press 9 is moved into the cavity defined by the archway 8 and is centrally positioned therein. The tank 24 is rotated so that the access chute 25 lies beneath the open roof of the archway 8 substantially equidistantly spaced from the four pivotable frame securement points of the two pivotable members 14 and 15. The sliding door is opened.

To empty the contents of the first receptacle 12, the pivotable member 14 is elevated from the lowered position to the illustrated raised position by activation of the hydraulic rams 18. The piston arms 20 progressively extend and move the pivotable member 14 such that the receptacle 12 is lifted and turned in a gentle tipping motion. The contents inside the receptacle 12 fall forward under gravity as the obtuse tilting incline of the receptacle increases. The contents pour from the offset aperture 21 and are 'pour' delivered into the tank cavity via the access chute 25. If necessary, the receptacle 12 can be rocked back and forth by alternation of the hydraulic rams 18 in reverse and forward drive to remove any material that may adhere to the base and sides of the cavity walls.

The pivotable member 14 and receptacle 12 are then returned to the lowered position by retraction of the piston arms 20. Throughout the lifting and lowering, the frame 3 is stabilised by the receptacle 7 functioning as a counterweight being retained in the lowered position by the lifting mechanism 6.

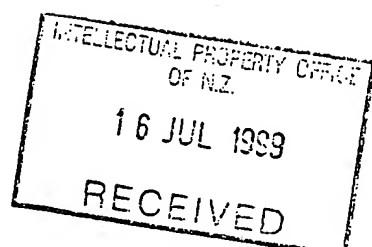
To empty the contents of the second receptacle 7, the lifting mechanism 6 is activated

whereby the piston arms of the hydraulic rams 19 progressively extend and move the pivotable member 15 so that the receptacle 7 is lifted and turned in a gentle tipping motion. The contents of the receptacle are expelled from the aperture 21 as described above in respect of the first receptacle 12. The receptacle 7 is then returned to the 5 lowered position. Throughout the lifting and lowering procedure, the frame 3 is stabilised by the receptacle 12 functioning as a counterweight being retained in the lowered position by the lifting mechanism 4.

After the contents of one or both receptacles 7 and/or 12 have been emptied into the 10 tank 24, the membrane press 9 is activated and the contents are pressed in known manner.

Whilst the apparatus 2 has been depicted and described for use in the wine industry, it will be appreciated that the receptacles 7 and 12 may contain any desired product. Similarly, it will be appreciated that the contents of each or both receptacles 7 and/or 12 need not be delivered into a membrane press 9. For example an open topped container 15 truck, conveyor, hopper or grape press could be substituted for the membrane press 9.

It will further be appreciated that the counterweight member 5 need not comprise a second lifting mechanism 6 retaining a receptacle 7 in the lowered position but may merely be an anchored weight of appropriate mass located at an opposing side of the frame 3 relative to the first lifting mechanism 4.



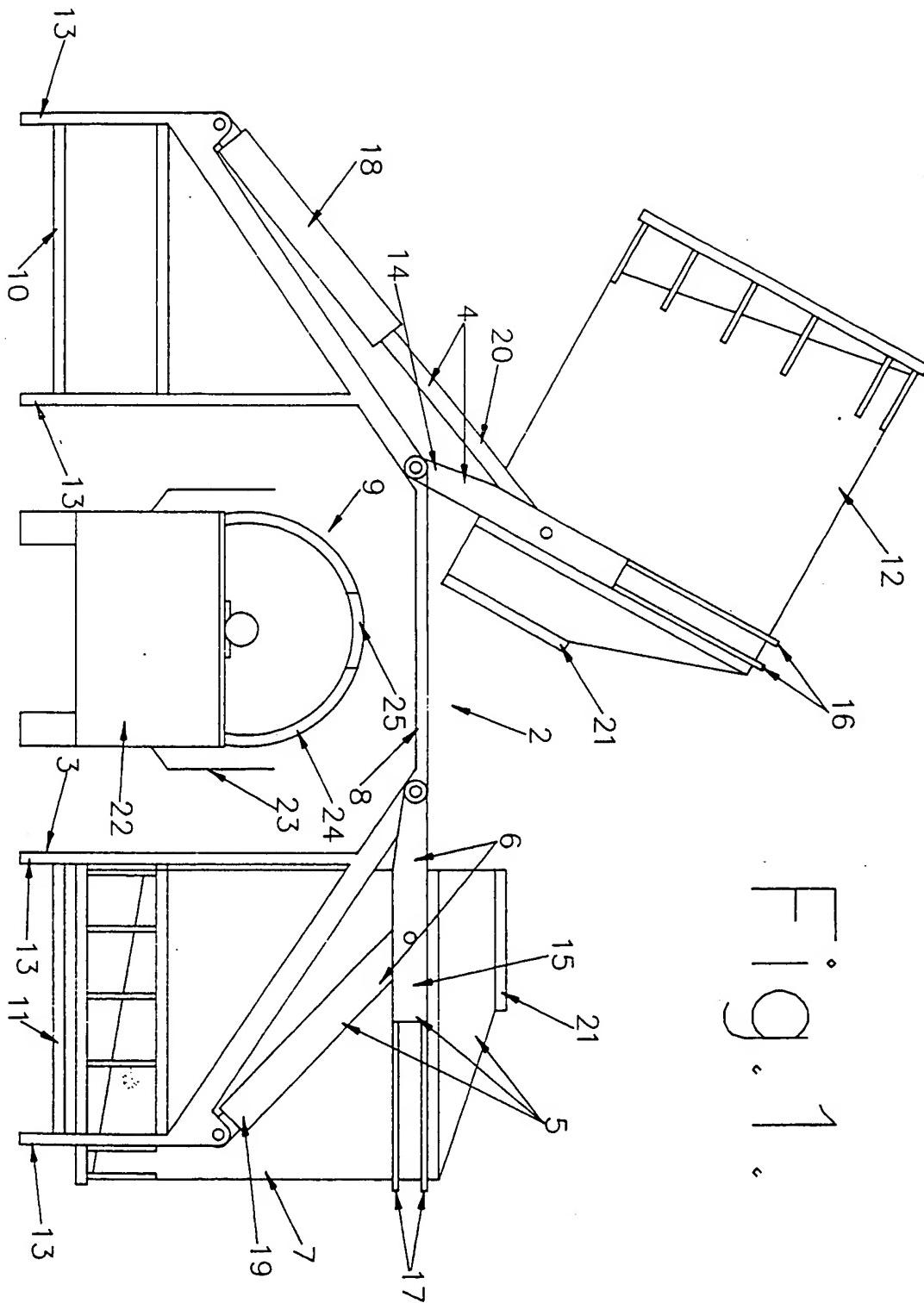


Fig. 1